RESEARCH HIGHLIGHT

July 2006

Socio-economic Series 06-013

Saline Creek Plateau Sustainable Community Design Charrette

INTRODUCTION

Fort McMurray, in northern Alberta, is the centre for development of the Athabasca oilsands. Its population of 60,983 in 2006 is expected to rise to more than 100,000 by 2010. This extremely rapid growth is creating numerous problems, including a severe housing shortage, high housing costs and the need for major infrastructure improvements.

Fort McMurray is the major population centre in the Regional Municipality of Wood Buffalo (RMWB). To deal with the anticipated growth, the municipality designated 862.3 ha (2,130.78 acres) in the Saline Creek Plateau for development, to start in 2007–2008, for between 20,000 and 25,000 people.

Work on the *Saline Creek Plateau Area Structure Plan* started in October 2005, with the assistance of Armin A. Preiksaitis & Associates Ltd. of Edmonton.

To ensure that the area would be developed with sustainable principles, despite the time and development pressures, the municipality, with CMHC's support, held a three-day visioning charrette from Feb. 14 to 17, 2006.

The charrette in February was seen as an opportunity to discuss ways of applying sustainable design practices to the Saline Creek plan and to all new communities in the regional municipality.

Saline Creek Plateau Area Structure Plan Study Area

The Saline Creek Plateau Area Structure Plan Area is southeast of the urban service area of Fort McMurray. It is on an existing transportation route, near the airport and close to the existing municipal infrastructure network, making it a preferred location for residential development.

Figure 1 Aerial photo of Saline Creek

The province owns most of the land in the Plateau, under Alberta Sustainable Resource Development.[1] The Keyano College Heavy Equipment Campus is in the southwest quadrant of the Saline Creek Plateau. Keyano College leases the land for heavy equipment vehicle training. The Rotary Club of Fort McMurray Oilsands leases land in the south end of the Plateau for a campground. Other uses on the site include active and inactive gravel extraction operations, radio towers and formal and informal recreation activities.

Charrette Goals

The overall charrette goal was the promotion of efficient, orderly and sustainable development of the Plateau and the illustration of a community where residents can live, work, play and learn.

Some of the specific goals included:

- Taking advantage of the site's natural systems and assets, preserving them where possible, and integrating them into the design of the community.
- Using the land efficiently by promoting higher density development without sacrificing liveability.

[1] Alberta Sustainable Resource Development is a department of the Alberta government. It works to ensure a balance between the economic, environmental and social values of the province. SRD fights forest fires, manages fish and wildlife, oversees the development of Alberta's forests and manages the use of public lands.

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- Providing a range of housing choice that addresses affordability and the needs of various demographic and income groups and contributes to long-term sustainability.
- Promoting sustainable transportation alternatives to the private automobile, including public transit, walking and bicycling.
- Exploring alternative development standards, such as the Fused Grid, for roadways and other municipal infrastructure.
- Providing a wide range of interconnected recreation, education and social activities that are easily accessible to residents of all ages.

Design Brief

Charrette participants received a brief containing a preliminary site analysis, illustrations of densities and building forms, the above goals and special considerations for the development of the Saline Creek Plateau before the charrette. The special considerations focused on the local climate and the impacts of continued industrial development of the surrounding Athabasca Oilsands and included:

- The need to respond to "winter city" design considerations — cold, snow removal and so on.
- The high degree of vehicle ownership and the large vehicles used by local industry and the implication for parking requirements, width of roadways, and so forth.
- The need to provide for the urban wildfire interface — FireSmart.[2]
- The need to recognize the importance of Highway 69, which runs along the Plateau as the main route into Fort McMurray from the Fort McMurray Regional Airport, and to treat it as a gateway to Fort McMurray.

CHARRETTE STRUCTURE

The charrette participants were organized into three teams.

The Transportation Team under the name Rollers and Strollers considered how people would get around in the community.

The Housing and Community Team focused on creating and reinforcing a sense of community. This team adopted the name Hearth and Home.

The Green Team focused on the natural aspects of the site and strategies for waste and energy conservation. This team became known as Earth, Wind and FireSmart.

Each team's task was to analyze the site and land uses according to its particular focus. This focused approach allowed each team to give adequate attention to the core priorities while ensuring consideration of all objectives for sustainable community design.

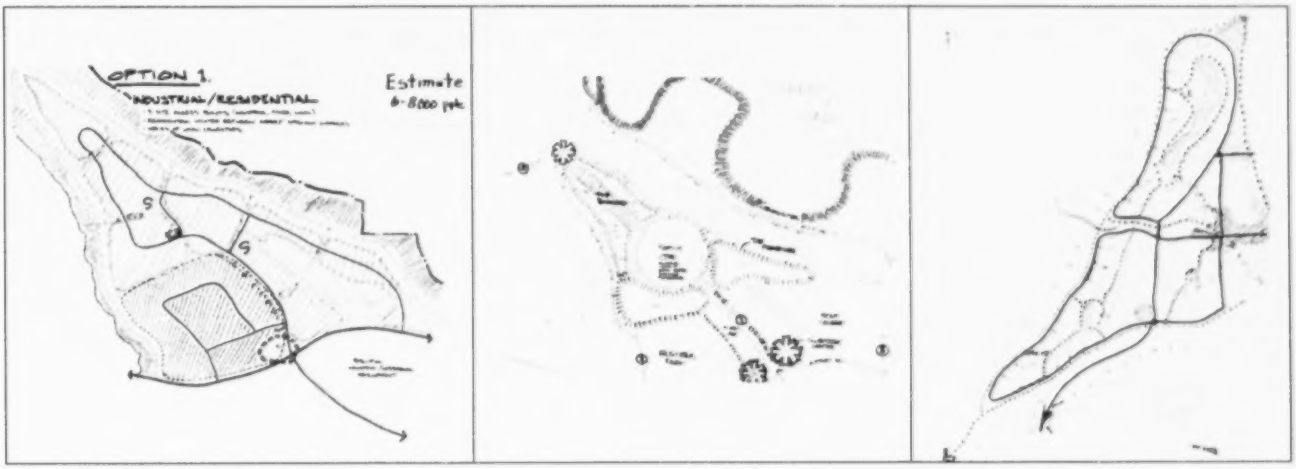
Figure 2 Elisa Campbell, of UBC's Design Centre for Sustainability, speaks to charrette participants

Charrette Event

Introduction

Participants heard from a number of speakers about sustainable community design, including Elisa Campbell from the University of British Columbia's Design Centre for Sustainability; Doug Pollard and Fanis Grammenos of CMHC; and Greg Christenson of Christenson Developments Limited. All the speakers also participated in the design teams.

[2] *FireSmart: Protecting Your Community from Wildfire* is a guide to reducing the risk of loss from wildland–urban interface fires. The RMWB and many other agencies use the *Guide*, prepared by Partners in Protection, an Alberta-based coalition, to guide planning decisions and help create mitigation strategies for wildfires near urban areas.



Day one results

Rollers and Strollers Bubble Diagram | Hearth and Home Bubble Diagram | Green Team Bubble Diagram

Day 1

The teams analyzed the site according to their priorities and summarized their concepts in "bubble" land use diagrams.[1] At day's end, the whole group discussed commonalities among the plans and identified elements that would form a new base plan for Day 2. The groups identified the following common elements:

- Consider Keyano College Heavy Equipment Campus lands for other business-industrial uses.
- Establish a strong, mixed-use, commercial gateway as the entrance to the community.
- Include community facilities and mixed uses in a neighbourhood central core.
- Design a perimeter pedestrian network with strong links to internal destinations.
- Consider the Rotary park area for regional recreation uses.
- Include two to three access points to the residential community in the design.

Day 2

Master planning of the community began. Using the new base plan which evolved from Day 1, each team further analyzed community needs and produced a variety of analytical diagrams, such as circulation and open space and infrastructure etc. Each team reported on its progress to the group at the end of Day 2.

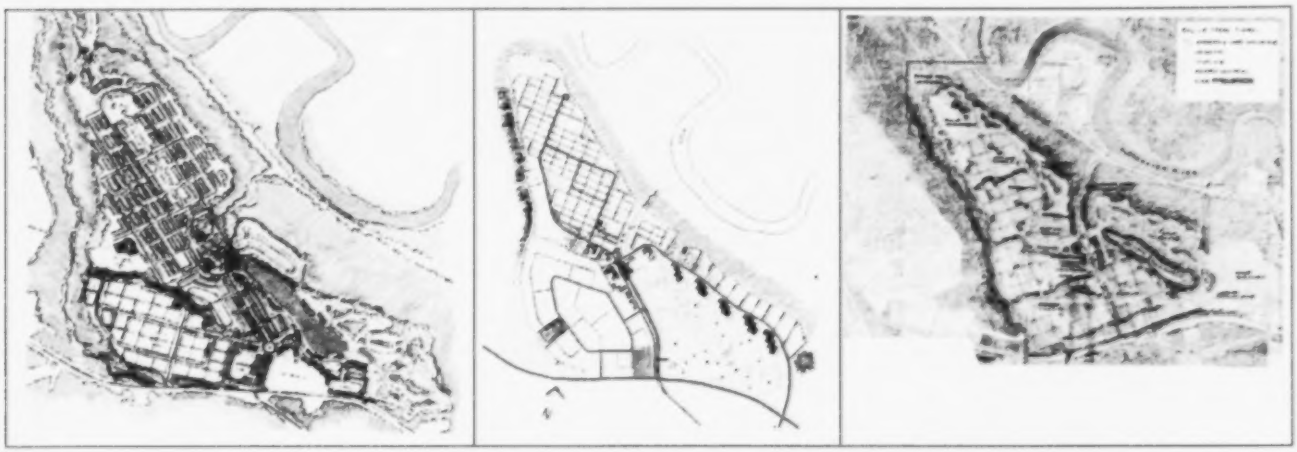
Day 3

The teams produced final concept plans with their proposed solutions for such issues as housing densities, transportation networks and so on. Each team presented its concept plan to the group.

The outcome was three concept plans, sharing a similar overall structure, but differing in details.

The municipality and its consultants will further analyze this output as input for the Area Structure Plan development.

[1] Bubble diagrams are planning tools. They are preliminary sketches and diagrams of land uses and their relationship to one another.



Day 3

Team 1: Rollers and Strollers | Team 2: Hearth and Home | Team 3: Earth, Wind and FireSmart

Team 1: Rollers and Strollers

The concept developed by the Rollers and Strollers included industrial, local and regional commercial, recreational and residential areas. The team developed options for population densities ranging from 6,000 to 8,000 people and up to 16,000 people. As the team's discussions progressed, it decided to expand the local Rotary Park into a regional recreational area and thus increased the park area. This, in turn, increased densities in the remaining areas of the Saline Creek Plateau Area.

This team focused on balancing residential, commercial and industrial uses so they would complement and respond to the needs of the larger community of Fort McMurray. Rollers and Strollers designated the perimeter of the site, along Highway 69, for mixed commercial and industrial uses on the western half and recreational uses on the eastern half. The team suggested creating design standards for all uses to ensure attractive development in this gateway area.

The Rollers and Strollers kept existing roadway networks on the site and changed the current central access point into a central corridor that can accommodate both vehicular and passive uses. This design shows the spine as a divided parkway leading to the village centre and supporting a local commercial area. The village centre would include community amenities such as local-commercial, a joint public and Roman Catholic high school site and community facilities.

The residential components of this design include a street pattern based on the principles of the Fused Grid, a street pattern developed by CMHC. The Fused Grid reduces the number of roads and increases the amount of green space, pedestrian connections and green infrastructure to create quieter, safer, healthier and more affordable neighbourhoods. Its north–south orientation on this site also allows enhanced solar access.

The Roller and Stroller design encourages residential density transitions from higher at the village centre to lower at Saline Creek edge areas.

Team 2: Hearth and Home

This team focused on creating a sense of community identity and responding to the housing needs of the urban area, operating on the principle that "our neighbourhoods are our homes" and as such they should be inclusive and complete.

The Hearth and Home team's concept plan incorporated a business-industrial component and the regional recreational area. These areas were located in the south portion of the site, along the highway and would be required to meet design standards. These areas would also help establish a strong "front door" into the community, along with a commercial and mixed-use area that would line the main entrance into the site and lead into the heart of the community, a core with a mix of community and commercial amenities. All areas of the site would be linked to the heart of the site through a strong, green, pedestrian network that would include a promenade around the perimeter of the Plateau.

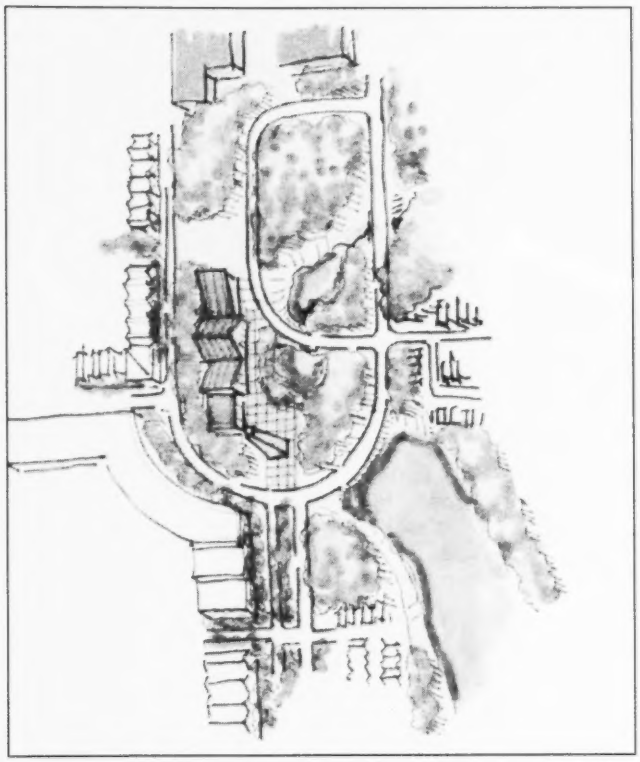


Figure 3 Community Heart: A Mixed Use Core (Team 1)

The grid-design residential component focuses on a medium-density built form. The grid design creates the flexibility to build what the market demands. The team placed high-density sites along the top of bank areas (opposite to rollers and strollers) to ensure that the greatest number of residents would have access to the views of the river valleys. Similar to rollers and strollers, a strong component of the Hearth and Home concept is incorporating architectural guidelines to ensure a high-quality community with a strong, unique character.

Team 3: Earth, Wind and FireSmart

The Earth, Wind and FireSmart team incorporated a wide variety of sustainable design principles and green infrastructure into a Fused Grid street network. The team also created a natural walkway spine as a main feature of the development and a strong connective route, including connections to a perimeter pedestrian network linked to the regional trail network.

This team's concept includes a strong commercial–recreational gateway, enhanced by a landscape buffer along Highway 69, and a grand boulevard entranceway into the community, flanked by mixed-use areas. The grand boulevard leads into the community core, which would be a campus with a high school, community centre and playing fields at the centre of the core. The grand boulevard also brings linear greenspace into the grid design.

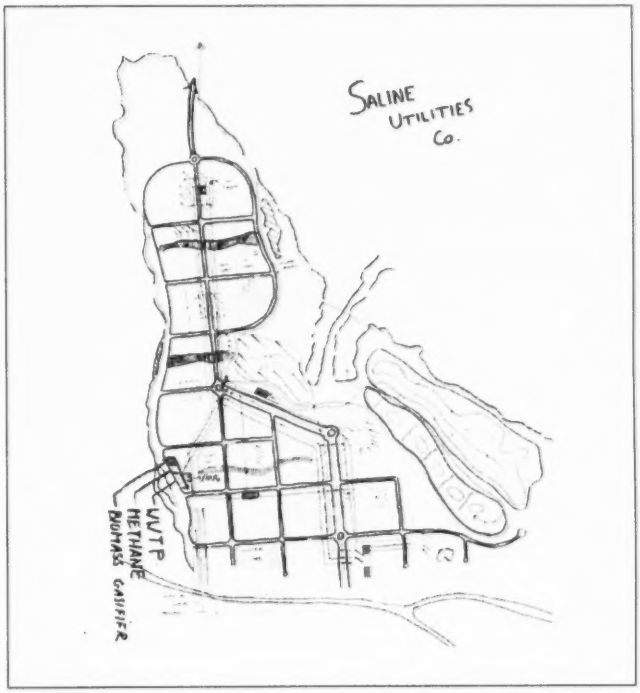


Figure 4 Waste Water Treatment Plant (Team 3)

The Earth, Wind and FireSmart team explored the synergies of residential, business and industrial uses and open–recreation spaces, all based on a Fused Grid design to build flexibility into the concept. The north–south orientation of the grid increases solar access and the grid parcels are designed to be self-reliant in that they would function as distributed energy cells.

Earth, Wind and FireSmart developed a variety of resource management options for creation of increased opportunities for energy distribution and transportation networks. Some examples include greywater recycling and reuse, geothermal and district heating, bioswale[4] runoff treatment and local waste water treatment options.

[4] A bioswale is a broad, open channel that is lined with grass vegetation, which acts as a filter to remove pollutants from runoff.

Comparative Land Use Budget

The following table presents the information based on each team's final concept plans. As a result of the different assumptions made by each team, the calculations of developable area and residential area differ, which makes it more difficult to compare the three concepts.

Population figures are based on average number of people per dwelling unit (ppu): 3 ppu for single-detached, semi-detached and townhouses and 2.5 ppu for apartments, based on 2005 Municipal Census information.

	Rollers and Strollers	Hearth and Home	Earth, Wind and FireSmart
Total site area	862.3 ha*	862.3 ha	862.3 ha
Undevelopable area	249 ha	255.8 ha	
Municipal reserve & circulation uses	165.2 ha	162.9 ha	64 ha
Net developable area†	364.1 ha (minus 110.2 ha for Rotary Recreation)	302.6 ha (minus 189.2 ha for Rotary Recreation)	
Residential area	101.1 ha	76.41 ha	120 ha
Units	5,952	7,794	8,969
Population	16,110	20,734	24,050
Overall density	59.4 units/ha	102 units/ha	76.4 units/ha
Single-detached	20.8 units/ha x35.4 ha =736 units	37 units/ha x25.47 ha =942 units	24 units/ha x35 ha =840 units
Semi-detached	39.5 units/ha x35.4 ha =1,398 units	59 units/ha x25.47 ha =1,503 units	38 units/ha x43 ha =1,634 units
Medium-density	126 units/ha x30.3 ha =3,818 units	210 units/ha x25.47 ha =5,349 units	60 units/ha x27 ha =1,620 units
High-density			325 units/ha x15 ha =4,875 units
Business park	141 ha	101.18 ha	
Local commercial	12 ha	2.02 ha	

* One hectare=2.47 acres

† Rotary Recreation area was seen as a flexible use due to ability to locate a storm water management facility, possible residential and other community facilities on the site.

Common Design Elements

The three teams' concept plans incorporated a number of common design elements. These elements include a commercial and mixed-use gateway, industrial and recreational components in the southern area of the site, a strong entrance feature incorporating linear greenspace, and a perimeter pedestrian network.

The concept plans also focused on increasing residential densities above those in traditional neighbourhoods in Fort McMurray, creating a central core of community facilities and an interconnected street grid pattern based on the Fused Grid design as researched and presented by Fanis Grammenos of CMHC. All teams suggested that architectural guidelines be incorporated to ensure that higher-density development did not decrease the liveability and quality of the community.

Suggested Policies for Saline Creek Plateau

Charrette participants emphasized the need to ensure that new development throughout Fort McMurray, including the Saline Creek Plateau, be attractive and high quality.

They wanted architectural controls established for all types of development — residential, commercial and industrial. They also spoke of the need to incorporate flexibility into the Area Structure Plan, particularly in establishing a mixed-use district, which would allow the area to change and evolve. They also welcomed opportunities to establish green infrastructure and buildings, conserving resources and improving energy efficiency through community design as concepts and policies to promote and encourage in future developments.

Next Steps

A preliminary report summarizing the charrette, each team's work, common design principles, elements and policy recommendations will guide development of the preferred land use concept for the Plateau. Charrette participants and members of the Municipality's Steering Committee for the Saline Creek Plateau Area Structure Plan have received copies of the report, which is also posted on the RMWB website at
http://www.woodbuffalo.ab.ca/municipal_government/municipal_departments/pdf/Preliminary%20Report.pdf

At the end of March, an open house heard feedback from charrette participants and the general public. The Open House had low attendance, but a number of charrette participants attended and confirmed the general direction of the report's principles and recommendations. Further technical review by the Steering Committee and the consulting team will create a preferred development concept from the results of the Saline Creek Plateau Sustainable Design Charrette. The Area Structure Plan is anticipated to be complete and adopted by RMWB Council in the fall of 2006.

The Participants

Charrette facilitator: Peter Russell, Holland Barrs Planning Group, Vancouver

Earth, Wind and FireSmart

Suzanne Anderson	Remax Fort McMurray
Darcy Elder	RMWB—Infrastructure
Wayne Jackson	Alberta Municipal Affairs
Semra Kalkan	RMWB—Planning
Chris Pereira	Armin A. Preiksaitis and Associates
Doug Pollard	CMHC
John Sainas	Terasen Utility Services
Beth Sanders	RMWB—Planning
Larry Scarbeau	CMHC
Anna Senkiw	Alberta Municipal Affairs
Jagdev Shahi	RMWB—Planning
Peter Spearey	RMWB—Parks

Hearth and Home

Lesley Arsenault	RMWB—Planning
Byron Bailey	Rotary Club
Vinay Bhardwaj	CMHC
David Brown	Gibbs Brown Johansson
Elisa Campbell	UBC Design Centre for Sustainability
Arjen de Klerk	RMWB—Planning
Lynn Edwards	Sutton Group Realty
Gilles Huizinga	Wood Buffalo Housing and Development Corporation
Tamra Hunt	Heritage Society / Royal LePage True North Realty
Lyle Markovich	Alberta Infrastructure and Transportation
Dave Marshall	Prairie Communities Corporation
Garry Shantz	Rotary Club/Realty
Jayden Tait	Assured Development Ltd
Laurene Viarobo	RMWB—Planning

Roller and Strollers

Armin Preiksaitis	Armin A. Preiksaitis and Associates
Greg MacKenzie	Armin A. Preiksaitis and Associates
Herb Kuehne	Associated Engineering Group
Cliff Maron	Wood Buffalo Builder's Association
Fanis Grammenos	Canada Mortgage and Housing Corp.
Stella Osteneck	Draper Station Estates
Garry Ferwerda	Keyano College
Jeanette Sibley	Oil Sands Realty
Martin Frigo	RMWB - Planning
Don Hussey	Urban Revision

CMHC Project Manager: Doug Pollard

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